

White Paper

Report ID: 2883040

Application Number: PF-230301-15

Project Director: Steve Bromage

Institution: Maine Historical Society

Reporting Period: 1/1/2016-4/30/2017

Report Due: 7/31/2017

Date Submitted: 7/14/2017



Solar-Powered Collections Storage

PF-230301-15

Maine Historical Society

White Paper

The goal of Maine Historical Society's Solar-Powered Collections Storage project was to offset the high energy demands of climate control in our new Collections Management Center through the installation of a solar electricity power system.

The purchase and development of an offsite Collections Management Center in 2014 was a collaborative project between Maine Historical Society (MHS) and the Portland Public Library (PPL). The two organizations now share a building as two condominium units. The Center was designed to meet the highest standards of collections care. Temperature, relative humidity, and light levels all follow the guidelines recommended to us by conservation consultants as part of Maine Historical Society's 2011 Preservation Plan. These systems were installed in the new Collections Management Center in November 2014. Through the retrofit, we upgraded the HVAC systems, replaced lighting with LED light fixtures, and installed insulated metal roof panels, making the building energy efficient. Even in an energy efficient building, however, climate control measures suitable for collections care consume a great deal of energy. Maine Historical Society sought to mitigate this resource usage by generating power through the installation of solar panels on roof of the facility. Maine gets 30% more sunshine per year than Germany, the world leader in solar energy installations. The location and flat roof of our new Collections Management Center building made it ideal for the generation of solar power.

Portland Public Library was part of our original proposal to install the solar energy system across the roof of both halves of our building. In 2016, Portland Public Library was offered the opportunity to join a solar energy initiative sponsored by the City of Portland that made use of many of the rooftops of city-owned buildings. The City recognized the Collections Management Center's prime location for solar panel installation and made the inclusion of the library's half of the Center (the roof of their condominium) a key part of their citywide solar strategy. MHS considered this alternative a wonderful opportunity which reflected our continuing entrepreneurial approach to securing funding for the Collections Management Center and for the solar project.

To reflect installation on the MHS roof only, our consultants at Revision Energy restructured the solar panel configuration. Advances in the field since our 2014 grant submission to NEH allowed ReVision Energy to rework the proposed solar panel configuration to produce a much higher output than originally planned. The two roofs would have generated 171,600 kilowatt

hours/year—the higher efficiency system we chose now produces 126,210 kilowatt hours/year on just half the surface area, and that energy is available for Maine Historical Society's use alone.

MHS Executive Director Steve Bromage concluded that, if we wanted to invest in the most powerful solar installation available to us, we would need to do so before installation—an addition in a few years' time would not be practical from a construction standpoint. Thus, our only project setback was one of timing. Once Bromage decided to pursue the more powerful solar option, we needed a few months to raise the extra funding needed. That short delay cost MHS our position in ReVision Energy's work schedule, so their work for us began in December 2016. The technicians from ReVision Energy were able to conduct their work through the winter months, however, and keep the project on track.

ReVision Energy began their installation of Maine Historical Society's 112kW grid tied photovoltaic system with permit and interconnection applications with the City of Portland and Central Maine Power. The building and electrical permits from the City of Portland were received in late December and interconnection approval from the utility was received in early February 2017.

In February and March the roof was still mostly covered in snow and so the installation began with inside electrical work. The three grid tied inverters were installed and wired to the AC combiner panel and an auto transformer was installed to match the system output voltage to the building's existing 208V three phase electrical supply. In April, the ReVision Energy crew worked with a local certified roofing contractor to install and flash all the solar attachment points on the roof in such a way that maintains the weather tightness of the roof and all roof warranties. Subsequently the ReVision Energy team installed the extruded aluminum rail system to which the 306 individual solar panels were then attached. The system was inspected by the electrical inspector and commissioned and turned on on April 25, 2017.

Grid-tied photovoltaic systems are extremely reliable—the expected lifespan of PV panels is close to 50 years. The system is exceptionally low maintenance, requiring virtually no interaction from MHS staff once installed. In addition to reducing our use of fossil fuels by 126,210 kwh/year, we estimate that Maine Historical Society will save \$14,000 each year in energy costs. That savings is essential to MHS' long-term financial model.

Maine Historical Society is featuring the solar project on our website, www.MaineHistory.org. The site features a brief history of the project and a photo essay of the installation. A Solar Log monitors our energy production in real time with totals of the yield for the day, month, and year, and shows the total amount of CO2 reduced. A direct link can be found here: <http://solar.mainehistory.org>.

In the entrepreneurial spirit of collaboration that inspired MHS and the Portland Public Library to jointly buy and renovate a building to develop into a shared Collections Management Center,

MHS has continued to seek ways that our Center can serve other collecting organizations. Last year MHS began renting part of our secure, climate-controlled space to other Maine institutions—the Bowdoin College Art Museum, Bates College Art Museum, Colby College Art Museum, and the Farnsworth Museum. Three private collections are also housed there, including the vast collection of a renowned American painter whose foundation has placed his works in our care.

The goal of Maine Historical Society’s Solar Powered Collections Storage project was to alleviate the high energy demands of museum quality 24/7 climate controlled collections storage by installing a solar powered system on the roof of our new collections management building. Thus, the project does not serve public audiences in the traditional sense, but the Collections Management Center does impact Maine Historical Society’s audience at our headquarters in downtown Portland. The Center is enabling MHS to radically improve the care of our core collections and, in moving collections out of areas on our downtown campus not designed for storage, we are freeing spaces in our historic Brown Library and our museum building—and redeploying them for exhibitions and programming. The new spaces have encouraged us to turn MHS into a laboratory where we are piloting and testing ideas, activities, and programs that are guiding the development of the institution. We are experimenting in all phases of our work, and focused on community engagement, visitor experience, and connecting MHS’s unique and significant resources to the contemporary needs and life of the community.

Several recent MHS initiatives responded to current issues. Each used history to humanize and provide broader perspective on issues that were otherwise only being discussed in sound bites. Each illuminated and gave voice to less well-known parts of the Maine experience:

Baskets from the Dawnland was an exhibition that MHS developed with partners in Maine’s Wabanaki community. Staff recognized that there was virtually no place in Southern Maine to learn about and discuss challenging issues related to Maine’s first people, including a current highly charged lawsuit related to water use and river rights. We invited Theresa Secord, a member of the Penobscot Nation and founding director of the Maine Indian Basketmakers Alliance, to co-curate the exhibit. The exhibition explored many facets of basket making: not only its importance as an art form and/or way to make a living but about its role in stewardship of the environment, preserving cultural heritage, commitment to family, pride in identity, and honoring creation histories and spiritual connections. The exhibition included historical baskets from the MHS collection as well as modern examples by artists from all four Wabanaki nations.

Our ***400 Years of New Mainers*** exhibition presented stories of recent immigrants against the rich history of immigration in Maine--and drew record numbers of visitors between

February and May 2016. The exhibition was co-curated by Reza Jalali, a refugee and human-rights advocate. Maine Historical Society developed the ***400 Years of New Mainers*** exhibition as a response to recent discussions on immigration in Maine and across the United States. Our goal was to provide a forum for shared knowledge and appreciation for the experiences and contributions of contemporary and historic immigrants to Maine. The exhibition explored the wide-ranging reasons that immigrants and refugees have come to Maine. Contemporary portraits and stories were presented alongside historical images of English, French, Italian, German, Armenian, and other ethnic groups who have settled here. Interaction with the materials in the exhibition helped recent immigrants develop a sense of belonging and an understanding of the long tradition of immigration that is part of Maine's rich heritage. Interest in student tours—from elementary students to adult ESL classes—forced us to extend the exhibition an extra month to accommodate the demand.

In honor of the 100th anniversary of World War I, MHS is now exploring the toll the Great War took on returning veterans. That history is paralleled in an adjacent gallery with contemporary portraits and stories in our exhibition, ***Veterans' Voices***. MHS, in collaboration with the Veterans Administration Healthcare System and the Southern Maine VA clinic, launched a program designed to capture the stories of Maine veterans. Throughout 2017, MHS is conducting community-based programs seeking veterans who want to share their stories. The stories will be part of "My Maine Stories," a new component of our Maine Memory Network (www.MaineMemory.net), which provides an online platform for individuals to share their personal stories as they relate, capture, and document the history of Maine and its people.

Because Maine Historical Society is now able to house our collections at an offsite facility with a sustainable plan for energy generation, we are better equipped to undertake activities like these that reflect new ways of partnering, engaging the community, and thinking about the relevance of history.